We claim:

1. A method of fabricating a microstructure for micro-fluidics applications, comprising the steps of:

forming a layer of etchable material on a substrate;

forming a mechanically stable support layer over said etchable material;

performing an anisotropic etch through a mask to form a pattern of holes extending through said support layer into said etchable material, said holes being separated from each other by a predetermined distance;

performing an isotropic etch through each said hole to form a corresponding cavity in said etchable material under each said hole and extending under said support layer; and

forming a further layer of depositable material over said support layer until portions of said depositable layer overhanging each said hole meet and thereby close the cavity formed under each said hole.

2. A method as claimed in claim 1, wherein said holes are arranged in a pattern along a projected path of a micro-channel, and said predetermined distance is selected such that said cavities overlap under the support layer and form said micro-channel.

3. A method as claimed in claim 2, wherein the hole size lies in the range 0.3 µm to 5.0 µm.

4. A method as claimed in claim 3, wherein the hole size is about 0.8 µm.

5. A method as claimed in claim 2, wherein the distance between neighboring holes lies in the range 0.8 µm to 10.0 µm.

6. A method as claimed in claim 1, wherein the distance between neighboring holes is about 2.0 µm.

7. A method as claimed in claim 1, wherein said predetermined distance is selected such that said cavities do not overlap in order to leave pillars therebetween.

8. A method as claimed in claim 2, wherein said pattern is T-shaped and said isotropic etch results in a T-shaped micro-channel.

9. A method as claimed in claim 2, wherein said pattern is cross-shaped and said isotropic etch results in intersecting micro-channels.

10. A method as claimed in claim 2, wherein said pattern is Y-shaped and said isotropic etch results in micro-channel splitter.

11. A method as claimed in claim 2, wherein said pattern of holes is in the form of an array with a narrow portion and a wide portion, and said isotropic etch results in micro-channel that widens out from a narrow portion to a wide portion.

12. A method as claimed in claim 2, wherein said layer of etchable material is SiO_2.

13. A method as claimed in claim 12, wherein said layer of etchable material is deposited by PECVD.

14. A method as claimed in claim 13, wherein said support layer is made of Si_3N_4.

15. A method as claimed in claim 14, wherein a sacrificial layer is deposited under said support layer.

16. A method as claimed in claim 15, wherein a sacrificial layer is deposited on top of said support layer.

17. A method as claimed in claim 17, wherein each said sacrificial layer is removed by etching at least in the vicinity of the micro-channel after formation of said micro-channel.

18. A method as claimed in claim 1, wherein said layer of etchable material is deposited onto a substrate containing an active device.

19. A method as claimed in claim 18, wherein said active device is a CMOS device.

20 A method of fabricating a microstructure for micro-fluidics applications, comprising the steps of:

forming a layer of etchable material on a substrate;

forming a first sacrificial layer on said etchable material;

forming a mechanically stable support layer on said first sacrificial layer;

forming a second sacrificial layer on said support layer;

providing a mask;

performing an anisotropic etch through said mask to form a pattern of holes extending through said support layer into said etchable material, said holes being separated from each other by a predetermined distance;

performing an isotropic etch through each said hole to form a corresponding cavity in said etchable material under each said hole and extending under said support layer;

removing each of said first and second sacrificial layers to expose said support layer; and

forming a further layer of depositable material over said support layer until portions of said depositable layer overhanging each said hole meet and thereby close the cavity formed under each said hole.

21. A method as claimed in claim 20, wherein a further sacrificial layer is deposited after forming said holes and prior performing said isotropic etch to form sidewall spacers for said holes.

22. A method as claimed in claim 21, wherein said sacrificial layers are TiN.

23. A method as claimed in claim 22, wherein said TiN is deposited by CRPVD.

24. A method as claimed in claim 20, wherein said holes are arranged in a pattern along the path of a projected micro-channel and said cavities overlap to form said micro-channel.

25. A method as claimed in claim 20, wherein said further layer of depositable material is $Si0_2$.

26. A method as claimed in claim 25, wherein said further layer is deposited by PECVD.

27. A method of fabricating a microstructure for micro-fluidics applications, comprising the steps of:

forming a layer of etchable material on a substrate;

forming a mechanically stable support layer on said first sacrificial layer;

forming a pattern of holes in said mechanically stable support layer;

performing an isotropic etch through each said hole to form a corresponding cavity in said etchable material under each said hole and extending under said support layer; and

forming a further layer of depositable material over said support layer until portions of said depositable layer overhanging each said hole meet and thereby close the cavity formed under each said hole.

28. A method as claimed in claim 27, wherein said pattern of holes is arranged along a projected path of a micro-channel and said cavities overlap to form said micro-channel.

29. A method as claimed in claim 28, wherein said further layer of depositable material is SiO_2 deposited by PECVD.